

X-Sieve: CMU Sieve 2.2
X-Sender: sunder@email.nist.gov
X-Mailer: QUALCOMM Windows Eudora Version 6.1.2.0
Date: Mon, 01 Aug 2005 10:51:31 -0400
To: wtc@nist.gov
From: Shyam Sunder <sunder@nist.gov>
Subject: Fwd: Comments on WTC final report (draft)
Cc: rgann@nist.gov, hsl@nist.gov, rbukowski@nist.gov, wgrosshandler@nist.gov, jason.averill@nist.gov, james.lawson@nist.gov, fahim.sadek@nist.gov, frank.gayle@nist.gov, jgross@nist.gov, terri@nist.gov, cauffman@nist.gov, cheri.Sawyer@nist.gov
X-NIST-MailScanner: Found to be clean
X-NIST-MailScanner-From: sunder@nist.gov

X-Sieve: CMU Sieve 2.2
Subject: Comments on WTC final report (draft)
Date: Mon, 1 Aug 2005 10:29:40 -0400
X-MS-Has-Attach: yes
X-MS-TNEF-Correlator:
Thread-Topic: Comments on WTC final report (draft)
Thread-Index: AcWWpSANGJk6gplQz6+ordq8Q1zkg==
From: "Bhol, Saroj" <sbhol@panynj.gov>
To: "Shyam Sunder \ (E-mail)" <sunder@nist.gov>
Cc: "Begley, James" <jbegley@panynj.gov>, "Fadavi, Ali" <afadavi@panynj.gov>, "Lin, C. John" <jlin@panynj.gov>, "Lombardi, Frank" <flombard@panynj.gov>, "Reiss, Alan" <areiss@panynj.gov>
X-NIST-MailScanner-Information: Please contact the ISP for more information
X-MailScanner:
X-MailScanner-From: sbhol@panynj.gov

Sam,
Please see the attachment for PA's comments on the final draft report.
Thanks
Saroj

<<Comments on NIST Report.doc>>

=====

Dr. S. Shyam Sunder
Deputy Director
Building and Fire Research Laboratory
National Institute of Standards and Technology
Gaithersburg, MD 20899-8600
Tel.: 301-975-6850; Fax: 301-975-4032

=====



Comments on NIST Report.doc

THE PORT AUTHORITY OF NY & NJ

Comments on NIST Draft Reports

NCSTAR 1

- Section 5.2.3 (Page 54): The "Architectural and Structural Design Guidelines, Specifications, and Standard Details" document was not issued as a replacement for the "Tenant Construction Review Manual". Instead, it contained additional guidelines and standards that were to be complied with for any alterations in the WTC towers.
- Section 5.3.2 footnote 8 (Page 55): Saroj Bhol's designation should read "Engineering Department, PANYNJ", and not "Design and Engineering".
- Section 5.3.5, Page 59: "Section 1.1.2" is described as referring to stairwell improvements, however there is no such section in the actual report. Regarding stairwell improvements, the Port Authority installed photo-luminescent paint and emergency power in the stairwells.

NCSTAR 1-1

- Executive Summary, Sections E.6 and E.8; and Chapter 7, Title and Section 7.5: Suggest replacing the word "variance" with "deviation" in order to avoid confusion with code variances.
- Executive Summary, Section E.10, Specifications for the original Buildings, 2nd paragraph; and Section 10.4.2: Business Occupancy in NYC Building Code is Occupancy Group 'E', not 'B.'
- Introduction, Section 1.3, last paragraph: The "Architectural and Structural Design Guidelines, Specifications, and Standard Details" document was not issued as a replacement for the "Tenant Construction Review Manual". Instead, it contained additional guidelines and standards that were to be complied with for any alterations in the WTC towers.
- Section 5.1.4, footnote 22: Same as second bullet for NCSTAR 1, Section 5.3.2 footnote.

NCSTAR 1-1C

- Section E3.2: Ongoing patch work of elevator fireproofing was done by Turner or Barney labors who were WTC GC. Please note that elevator 6/7A were abated and re-fireproofed post 93. Elevators 12/13/14/15A were also re-fireproofed.

NCSTAR 1-1H

- Page 47, Executive Summary: "Emergency lighting and exit sign enhancement" mentions post-1993 use of battery packs but omits mention of photo-luminescent paint in stairs and signage.

NCSTAR 1-4

- Page 42, 3rd paragraph states, "No information was found that indicated that the generator/fuel day-tank enclosures in WTC 7 were protected by automatic sprinklers or other special hazards protection." This is incorrect.
7 WTC was fully protected by automatic sprinklers. The enclosure for the fuel tank on the 1st floor (where the Mayor's Emergency Management Office was located) was 4-hr fire rated and had clean agent (Inergen) extinguishing system protection. PA provided NIST with complete design and construction documents.
- Page 44, 1st paragraph: The original fire alarm system was developed and supplied by the "American Multiplex System Company", not "American Multiple System Company".

NCSTAR 1-7

- Page iii, Acknowledgements, 5th paragraph: Alan Reiss, who was the Director of World Trade Department on 9/11/2001 should be included for his extraordinary effort in providing valuable information from his own and former WTD staff's personal records and facilitating access to PA personnel who were involved in the operation and maintenance of World Trade center.
- Page 12, Table 2-1: 110 in 1 WTC were TV transmitter rooms, and not studios; the 44th floor of 1 WTC was not the cafeteria, but rather the kitchen for the cafeteria. The cafeteria in 1 WTC was located on the 43rd floor. The 43rd floor of 2 WTC contained the Dean Witter cafeteria.
- Page 17: Fig 2-7 is a picture of the commodity trading floor in 4 WTC, 7th floor. However, it is NOT typical of trading floors in towers, which were rows of desks with complex phone systems and multiple monitors per position. Traders generally sat at their desks; 4 WTC was an exception.
- Page 28: 2nd paragraph says the Port Authority treated the plaza as an underground street. This is not accurate. The plaza was not underground; it was an open space at the street level. The concourse level was treated as an underground street during original design (the plaza was treated as a street).

The PA added bridges from the mezzanine and additional exit doors after original construction so that occupants exiting stairs by West Street did not have to traverse the entire mezzanine to get to 1 WTC's east side plaza. Instead, they could exit north or south directly over the stairs, which descended to street level and placed them on the plaza right away. The same changes were made in 2 WTC.

- Page 28, Transfer Hallways: The paragraph states that there were horizontal transfers in stairwells at floors 66 & 68. This deviation only occurred in one stairwell (i.e., A) in one building (i.e., 1 WTC) as opposed to the areas between 42-48 and 76-82 which jutted out in the A & C stairwells in both towers. It should also be noted that the horizontal deviation between floors 66-68 was a much more minimal one, (i.e., with the continuation of the stairwell in view and no smoke doors or other obstructions) than the other "transfer" areas mentioned. The distinction should be made. Also, in discussing the horizontal transfers, it should be mentioned that there were smoke doors in the transfer hallways (in the 42-48 and 76-82 areas) that were kept closed but not locked.
- Page 30: Stairway doors leading in and out of tenant spaces were not integrated into the computerized access system controlled remotely from SCC on the 22nd floor; the only stairwell doors on this system were those leading into spaces such as mechanical equipment rooms on 41, 42, 75, 76, and doors leading from stairwells A & C to the 110th floor (necessary to pass through to access the roof). The system also controlled the two doors leading from the 110th floor to the roof. Doors leading in and out of tenant spaces had manual locksets to allow access into the stairs.
- Page 34: Elevators 6 & 7 served Windows or Observation deck. Note that Elevator 6 was a dual-use car, pax or freight during off hours.
- Page 39, Section 2.3.2: Bullets relating to the sky lobby deputy fire safety director should be deleted. There were no deputy fire safety directors stationed in the sky lobbies on the 44th and 78th floors as of September 11, 2001. These stations were eliminated when the backbone of the new fire alarm system was installed in the mid-90s. After this time, only elevator starters were posted in the lobby.
- Page 42, Section 2.4: The cost for the life safety upgrade was close to \$250 million.
- Page 98, Section 6.2.4, 2nd Paragraph; Executive Summary, page xxxiv, 2nd paragraph: The Port Authority is not aware of substantiation to support a specific time for the "first" public-address announcement, (which we believe occurred before 9:00 AM) or whether there were simply two discrete announcements. Please verify.
- Page 111, Section 8.5, 2nd Paragraph: See bullet 5 of this section, p. 30; Doors leading from tenant space into the stairwells were not controlled by the SCC. As noted, these doors were always kept unlocked from the floors into the stairwells, with re-entry possible on at least every 4th floor. The inoperable tenant stairwell doors and/or smoke doors in the transfer hallways (reported in some cases as "locked" were likely jammed by shifting caused by the impact of the plane or otherwise

blocked by debris. Issues with the SCC's computerized access system were not relevant to the ability of these doors to open.

- Page 123: The express elevator that eventually returned to the lobby may have been on slow-speed run. The elevators were wired to come to an emergency stop if a safety circuit was triggered (such as manual emergency stop button or opening of door interlock). During the 1980s, as a means of preventing extended entrapments (especially during off-hours), Otis Elevator modified the circuitry so that if the circuit was restored, the elevator continued towards its destination at inspection speed, typically around 50 FPM. The safety switch circuit was a series circuit. If people on a crowded elevator leaned on the interior car door and it moved about 1/4", the safety circuit would be tripped. Some switches, such as those on the follower or sheave in pit, were manual reset safety switches.
- Page 143, etc.: Please spell out "PA" as "public address"; reader may confuse with Port Authority.
- Page 148: Port Authority purchased evacuation chairs and provided them free to tenants after the 1993 bombing.

NCSTAR 1-8

- Page xxxv, Acknowledgement: Alan Reiss, who was the Director of World Trade Department on 9/11/2001 should be included for his extraordinary effort in providing valuable information on Emergency Response Operations from his and former WTD staff's personal records and experience in the operation and maintenance of World Trade center.
- Page xl of Executive Summary, Section E.2, 5th bullet: Controls for repeater operation were moved to the Fire Command Desks inside the lobby of each of the two towers at the FDNY's request.
- Page xlii, In the section "Initial 'Size-up' and Impact of Aircraft Damage to WTC 1", it should read, "Upon entering WTC 1 and going to the fire command desk to set up the Lobby Command Post, he met with the building's former Fire Safety Director..."The person who was the WTC Fire Safety Director before SPI took over was no longer the Fire safety Director for the WTC under SPI management. The new fire safety director under SPI management died on September 11, 2001.
- Page 1 of Exec Summary, 2nd bullet says Buildings were not clearly marked, and many emergency responders did not know one building from the other. This resulted in units being assigned to one building and reporting to the other building without knowing that it was the wrong building. While the PA acknowledges the confusion depicted in the radio transcripts, it disagrees on the notion that the towers were not clearly marked. Both 1 & 2 WTC were marked with approximately 12-foot high pylon type signs with large red text on black background, along with smaller text indicating Windows on the World and the observation deck. These signs were located on West & Liberty Street entrances to the towers and were installed post-1993. Both towers' lobbies

contained large black & white overhead signs indicating the building number and the locations of the proper elevator banks.

- Page 1 of Executive Summary under Emergency Communications reads, "Lack of rigorous pre-emergency inspection and testing of radio communications systems within high-rise buildings to identify performance gaps and inadequacies." The system installed at the World Trade center was fully tested and checked out by FDNY before being placed into service to verify expected performance both above & below grade. Please refer to the letter from FDNY that was previously transmitted to NIST by the Port Authority. Please note that PA's criteria for the design of the system was 95-98% coverage.
- Page 48, section 5.4 "Roof Rescue and Aviation Procedures", 2nd Para ("Roof Access..."), sentence beginning "No fire safety procedures...": At end of sentence (after "key run"), please indicate that on September 11, 2001, the SCC attempted to release all locks controlled by the computerized access system but was unable to do so because of damage to the system sustained during the impact of the plane.
- Page 128 contains numerous references to FDNY's new 800 MHz radios. These radios were not 800 MHz trunked radios but were UHF radios in the 480Mhz range. They were capable of both analog and digital modes of operation. These radios are completely different from the 800 MHz radios issued to chiefs for inter-agency communication. Please check details with FDNY. This trade journal editorial contains additional details regarding FDNY radios:

<http://mrtmag.com/mag/radio_fixed/>